US009734654B2

(12) **United States Patent**
Vogt

(10) **Patent No.: US 9,734,654 B2**
(45) **Date of Patent: Aug. 15, 2017**

(54) **PARKING METER POLE**

(71) Applicant: **Christopher M. Vogt**, Chisago City, MN (US)

(72) Inventor: **Christopher M. Vogt**, Chisago City, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 159 days.

(21) Appl. No.: **14/687,278**

(22) Filed: **Apr. 15, 2015**

(65) **Prior Publication Data**

US 2015/0294526 A1 Oct. 15, 2015

Related U.S. Application Data

(60) Provisional application No. 61/980,035, filed on Apr. 15, 2014.

(51) **Int. Cl.**

F16M 13/00	(2006.01)
G07F 17/24	(2006.01)
E04H 12/22	(2006.01)
E01F 9/681	(2016.01)
E01F 9/615	(2016.01)
E04H 6/42	(2006.01)

(52) **U.S. Cl.**

CPC ***G07F 17/24*** (2013.01); ***E01F 9/615*** (2016.02); ***E01F 9/681*** (2016.02); ***E04H 12/2238*** (2013.01); *E04H 6/42* (2013.01)

(58) **Field of Classification Search**

CPC ... G07F 17/27; G06Q 20/127; E04H 12/2238; E04H 6/42; E01F 9/681

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,420,013	A *	1/1969	Alvarado	E04F 11/1812 52/1
4,807,838	A *	2/1989	Anderson	A47B 13/023 248/188
6,058,675	A *	5/2000	MacDonald	E01F 9/61 52/834
6,446,411	B2 *	9/2002	Natelli, Jr.	E04C 3/29 52/170
7,278,240	B2 *	10/2007	Burkart	B29C 33/005 248/346.01

* cited by examiner

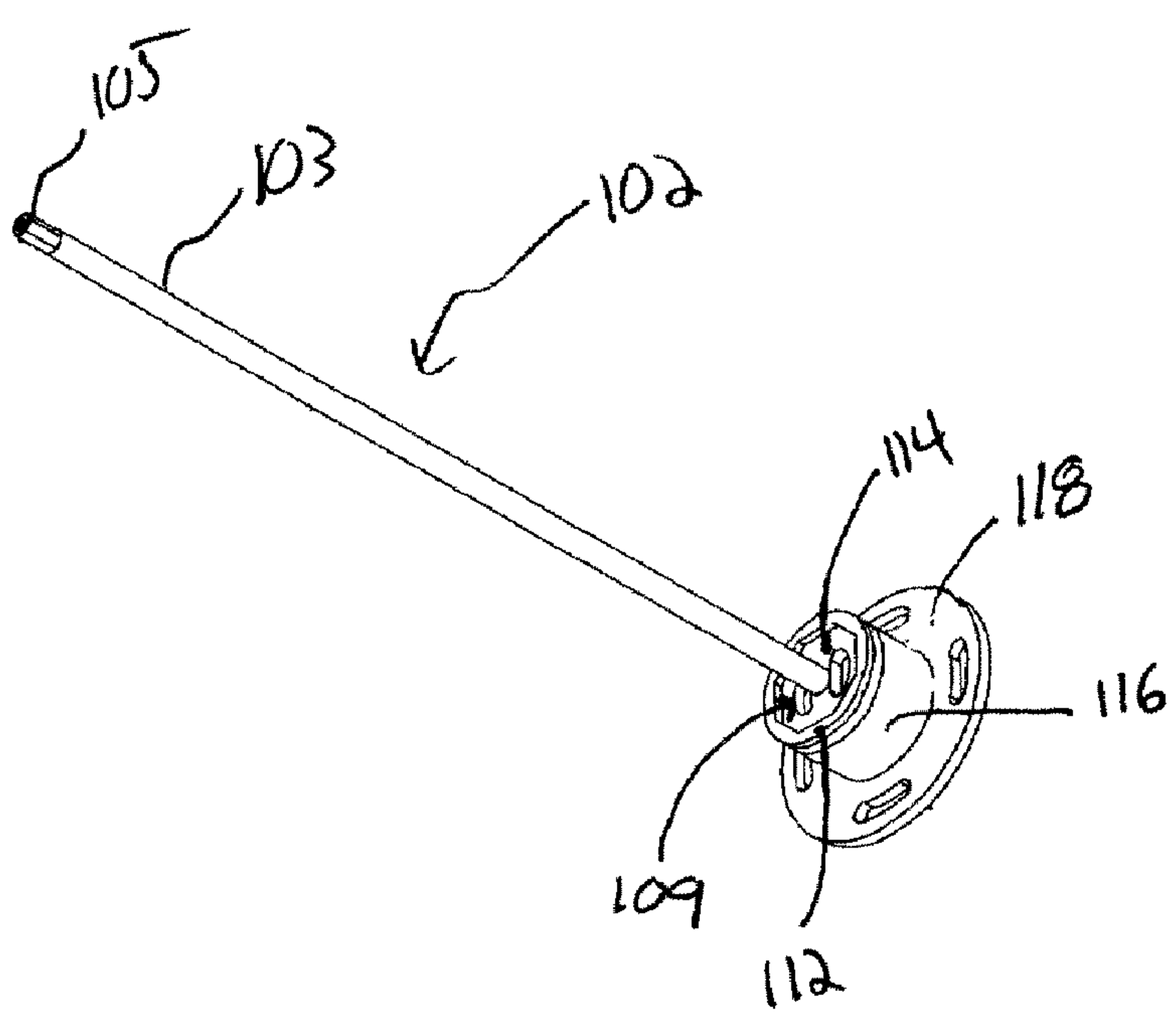
Primary Examiner — Amy Sterling

(74) *Attorney, Agent, or Firm* — Patterson Thuente Pedersen, P.A.

(57) **ABSTRACT**

A pole mounting system can be configured as a center drawn mounting system which allows the user to securely mount and adjust the inner stanchion in various rotational orientations about the vertical axis. The system also allows any electrical wiring or other conduit to be run up inside of the pole. Once the inner stanchion is fastened in place, the outer stanchion fits over top with a first disc on the outer stanchion interlocking with a disc recess on the inner stanchion, thereby preventing the outer stanchion from twisting with respect to the inner stanchion. Once a locking bolt is in place, the parking meter is fastened to the top of the outer stanchion. The present system is tamper resistant because the electrical wiring or conduit and the mounting hardware are not externally accessible once installation is completed.

10 Claims, 12 Drawing Sheets



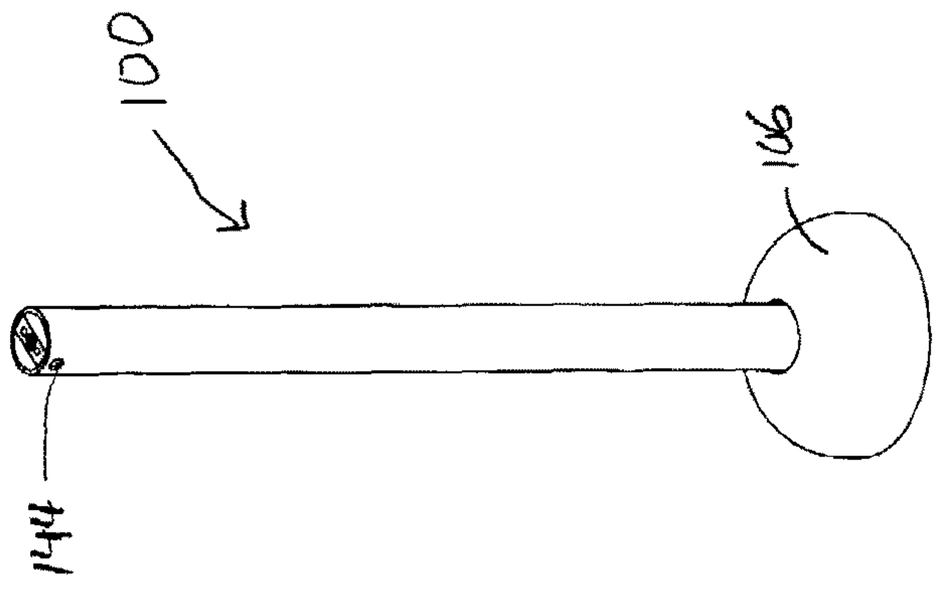


FIG. 1

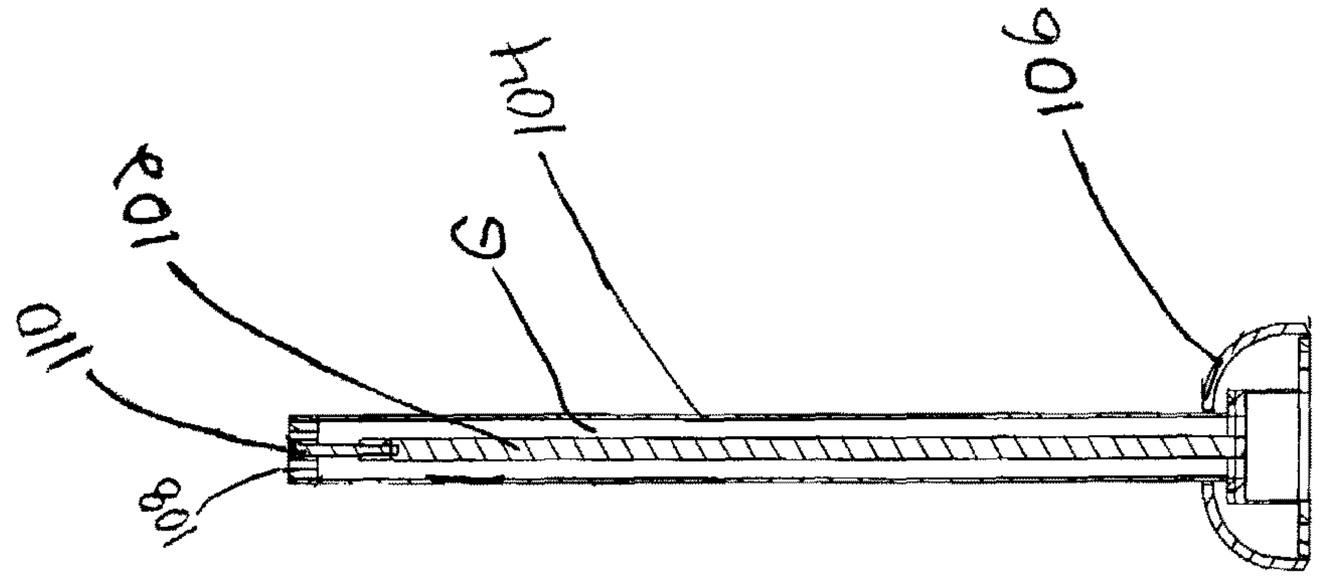


FIG. 4

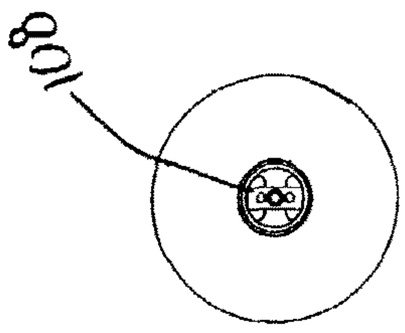


FIG. 2

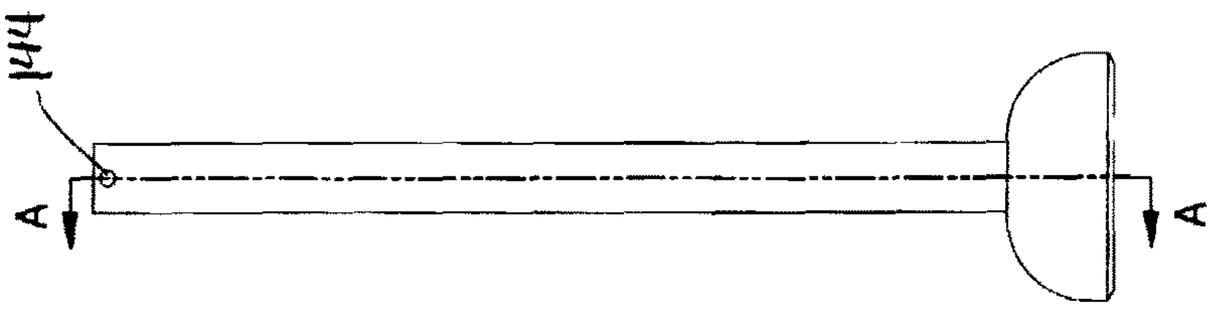


FIG. 3

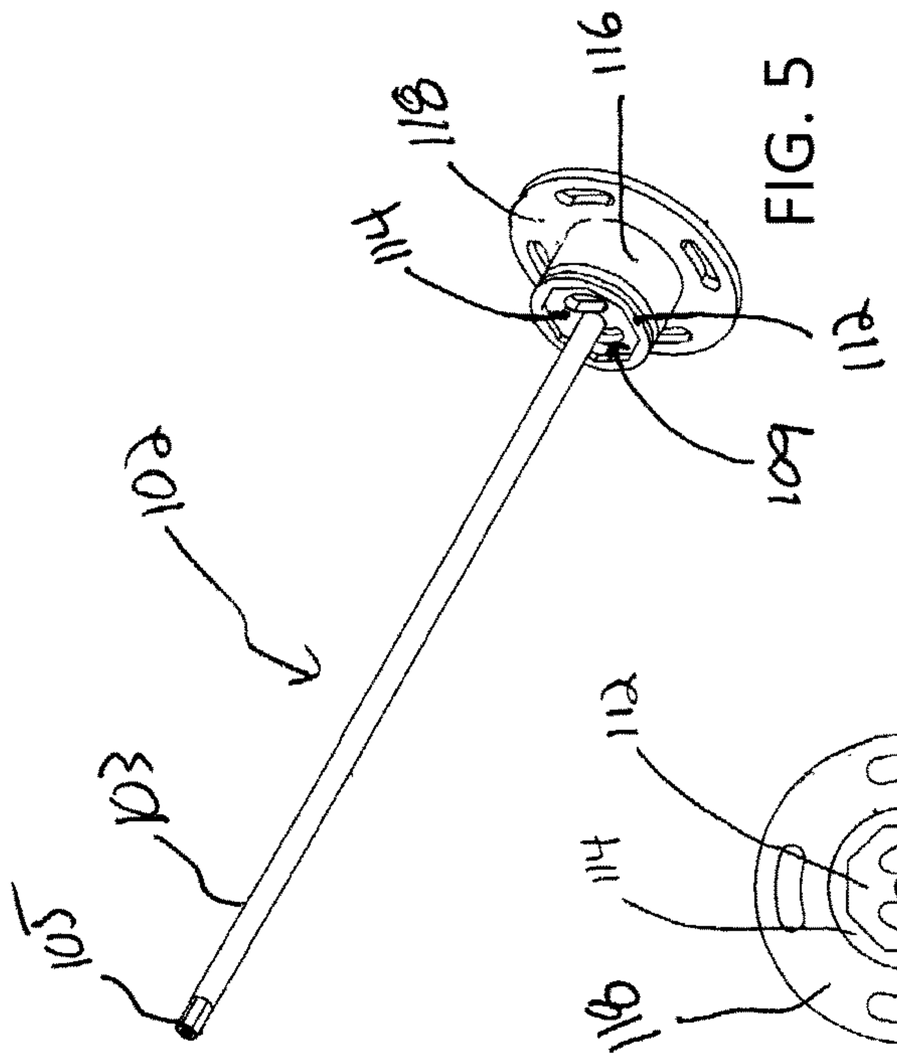


FIG. 5

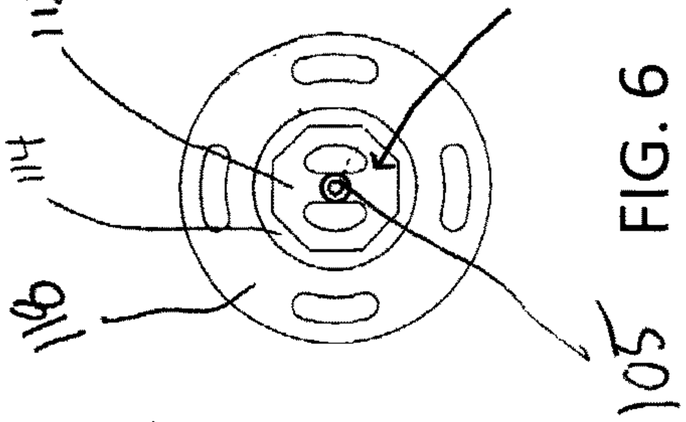


FIG. 6

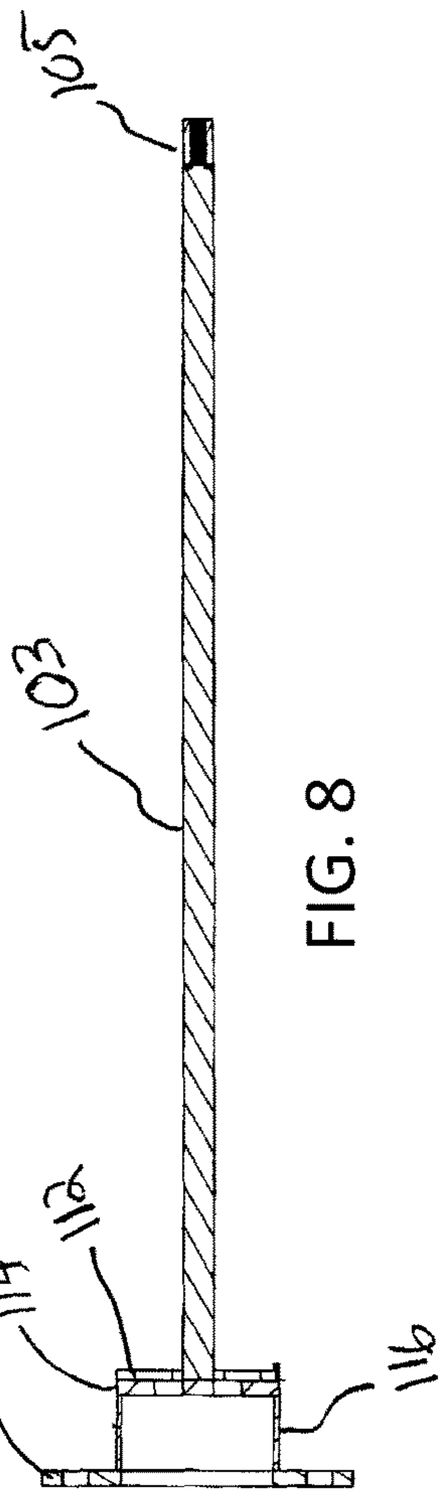


FIG. 8

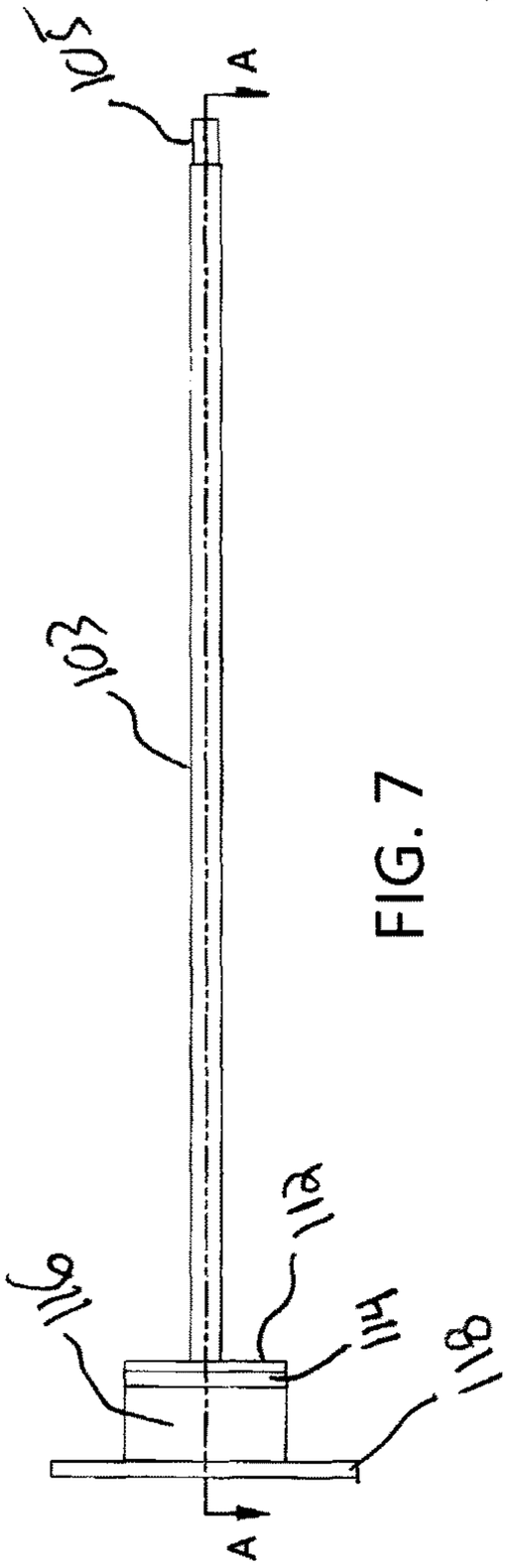


FIG. 7

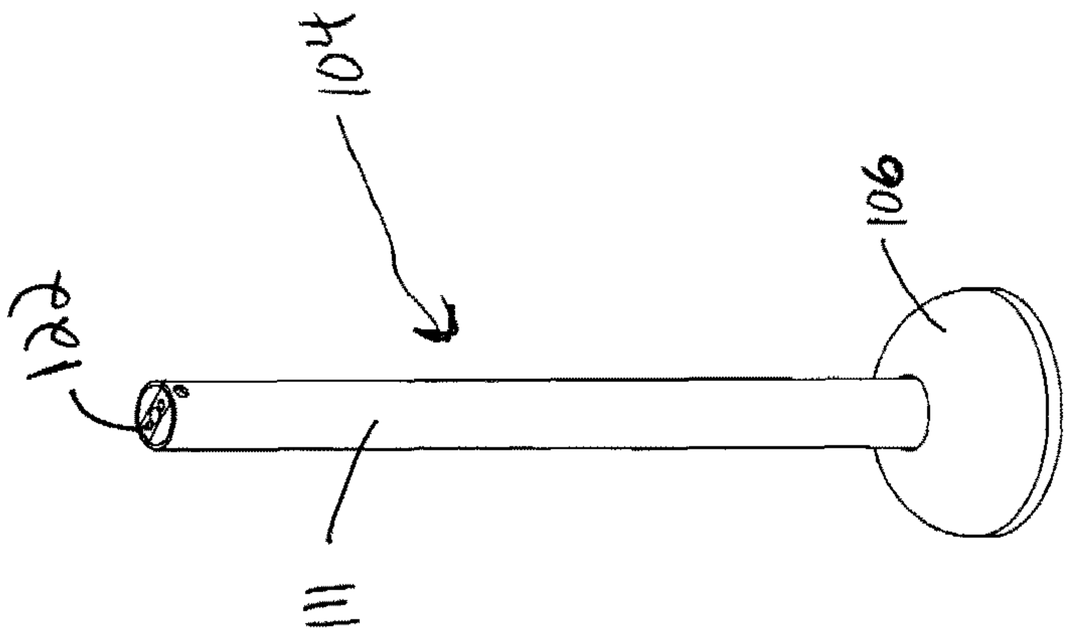


FIG. 9

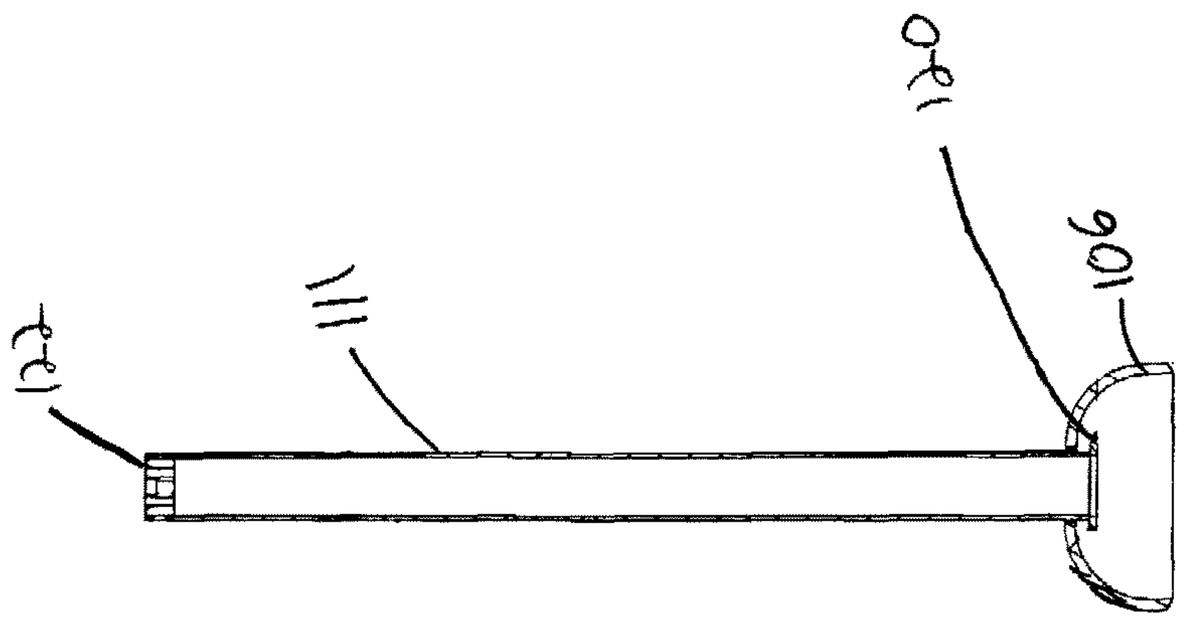


FIG. 12

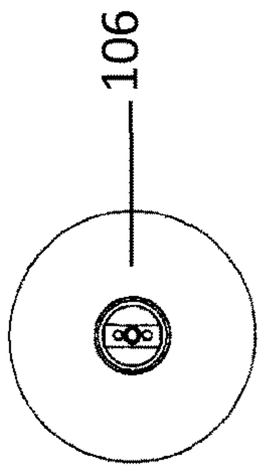


FIG. 10

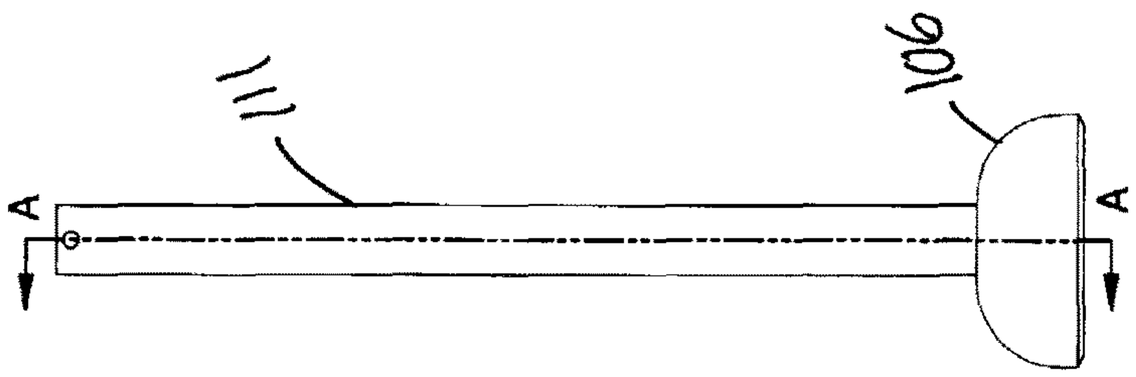


FIG. 11

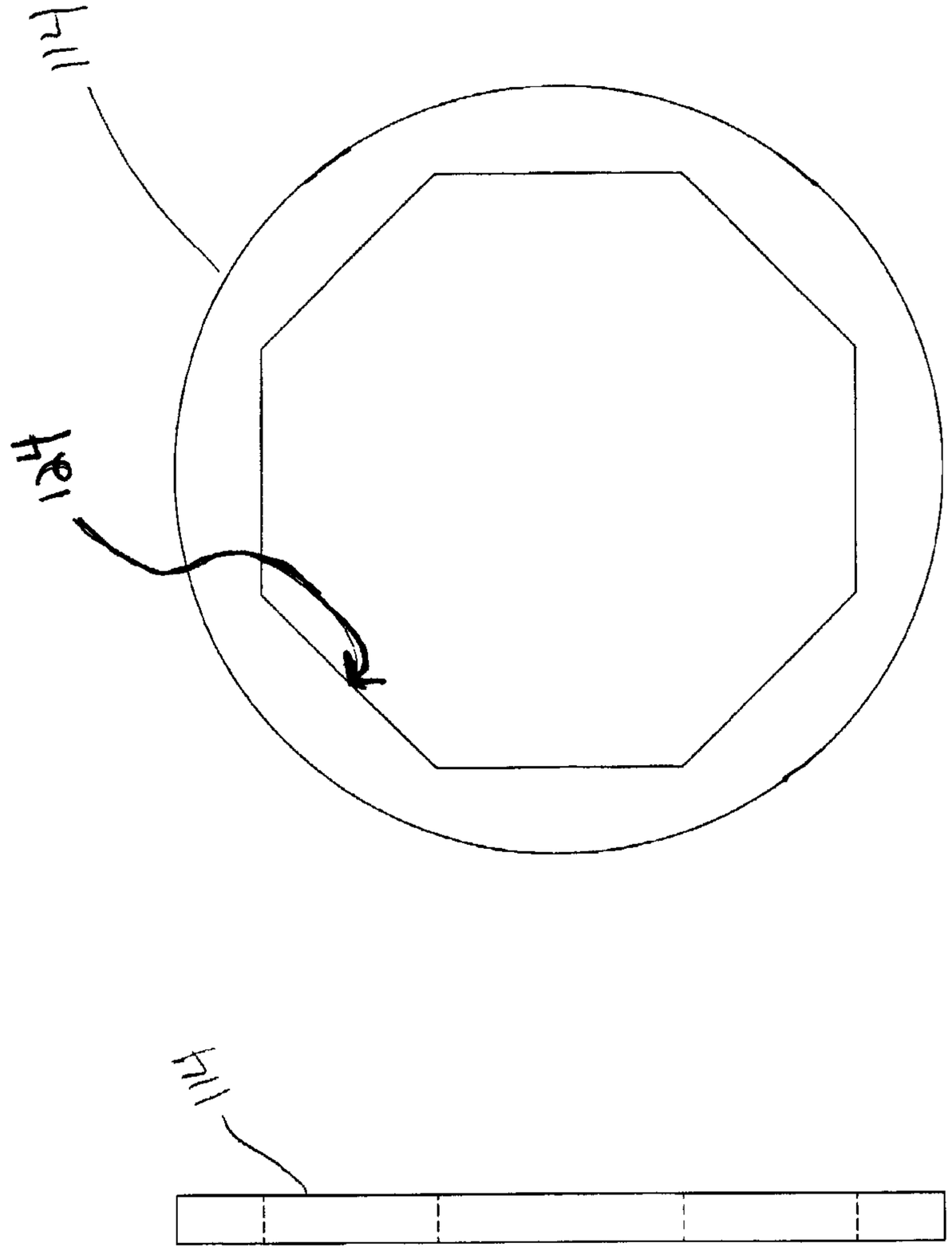


FIG. 13

FIG. 14

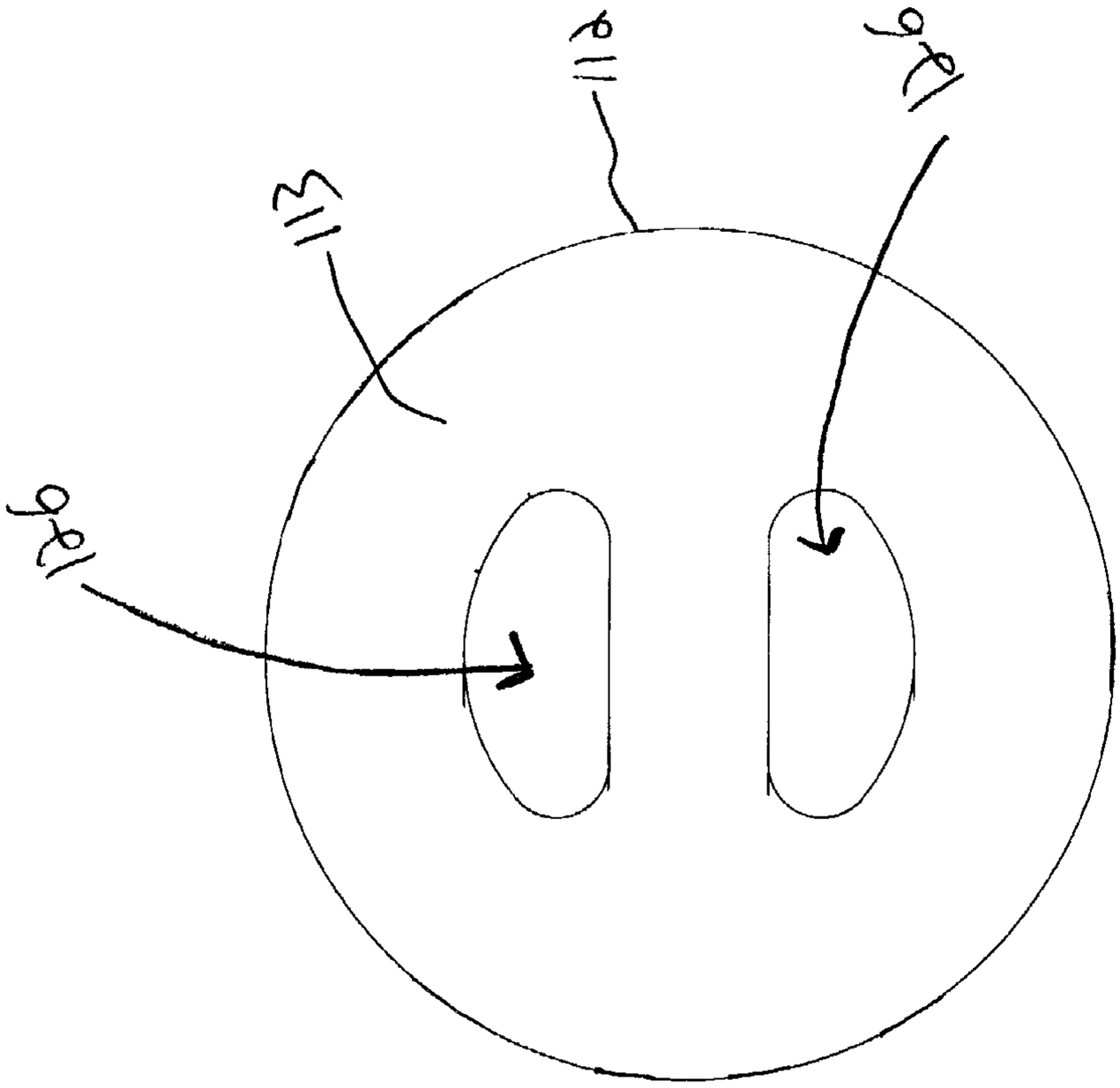


FIG. 16

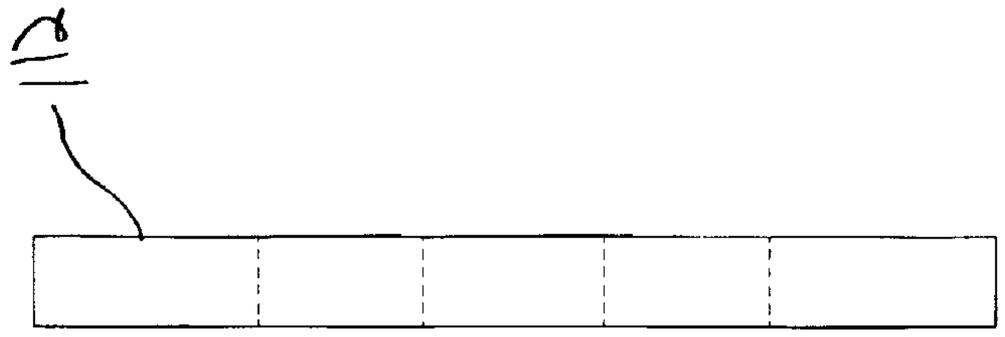


FIG. 15

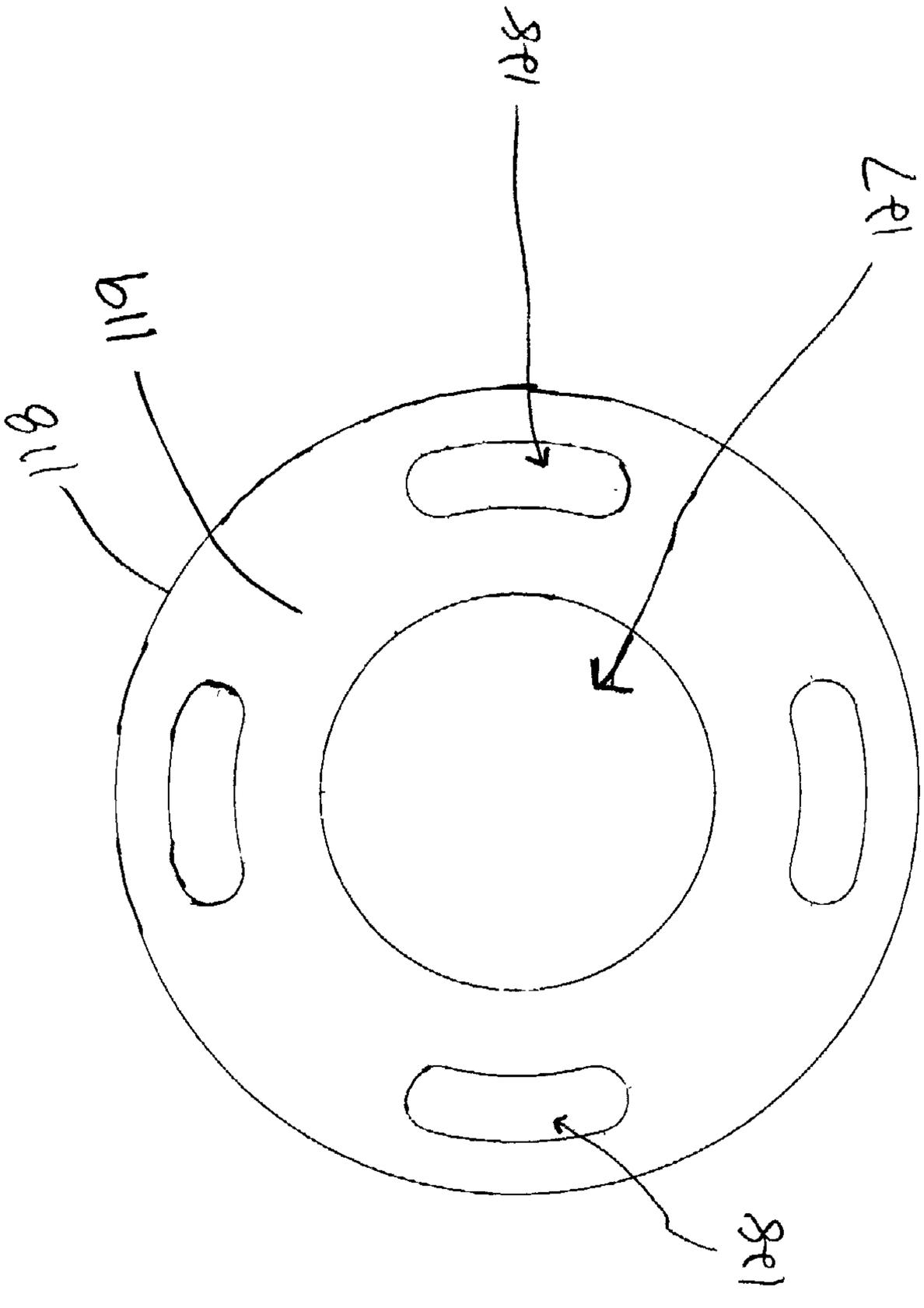


FIG. 18

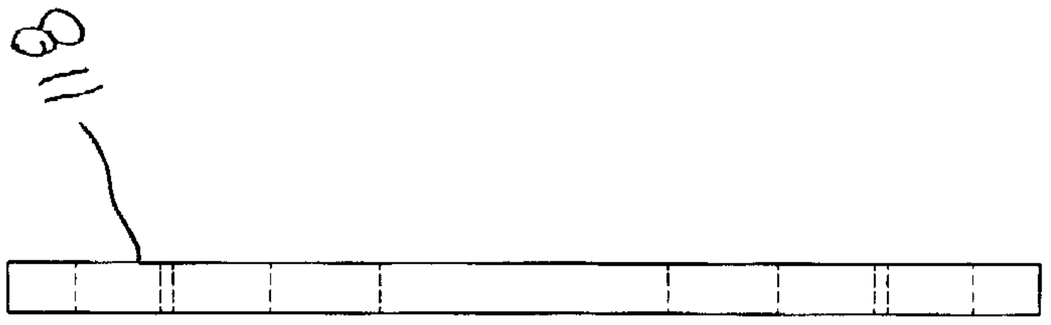


FIG. 17

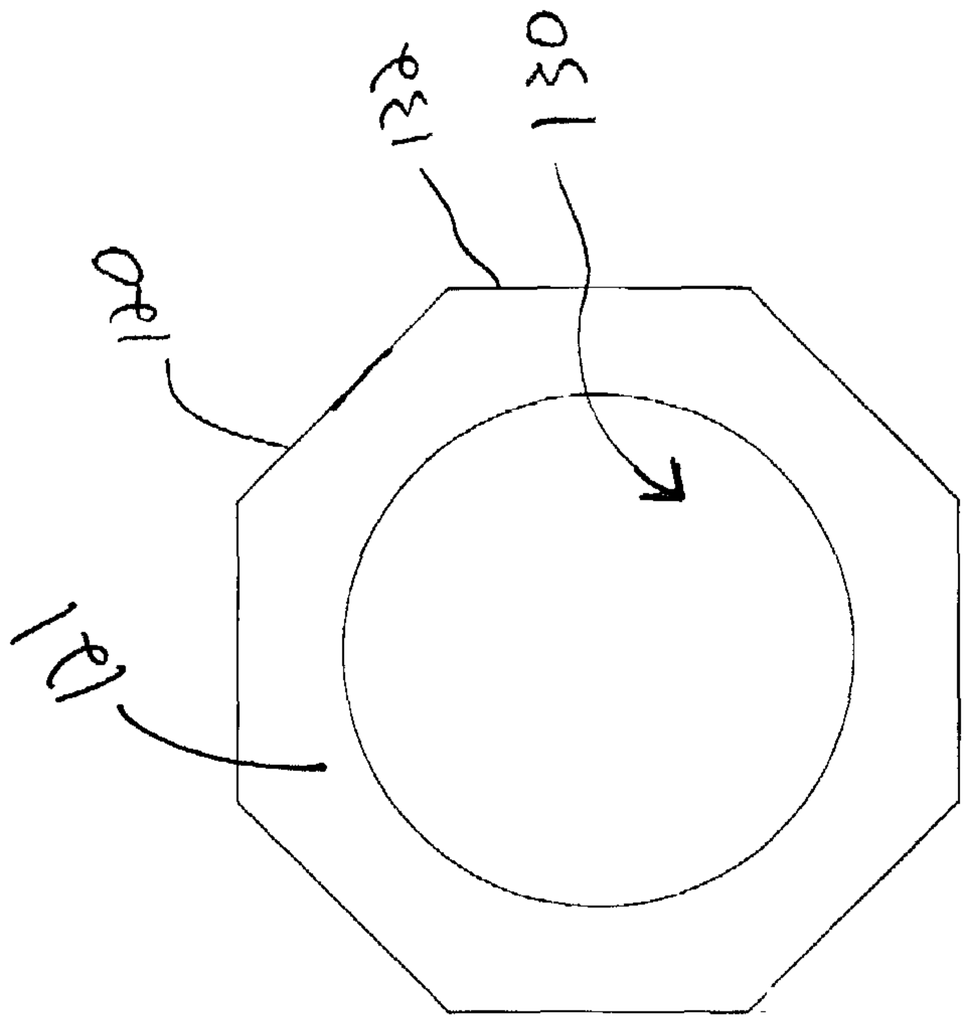


FIG. 20

FIG. 19

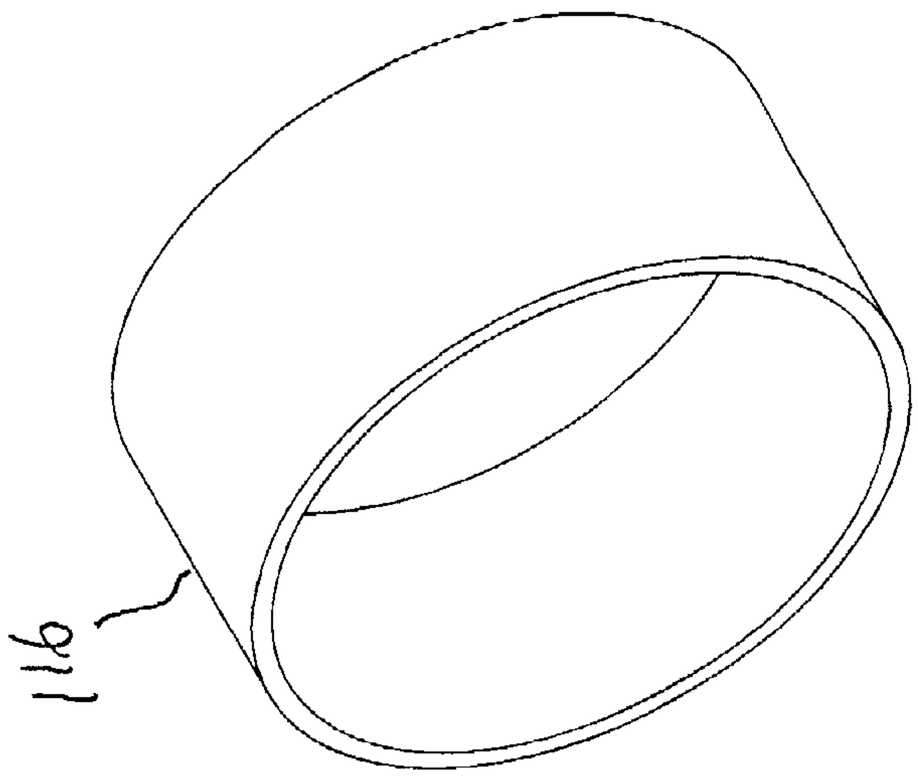


FIG. 23

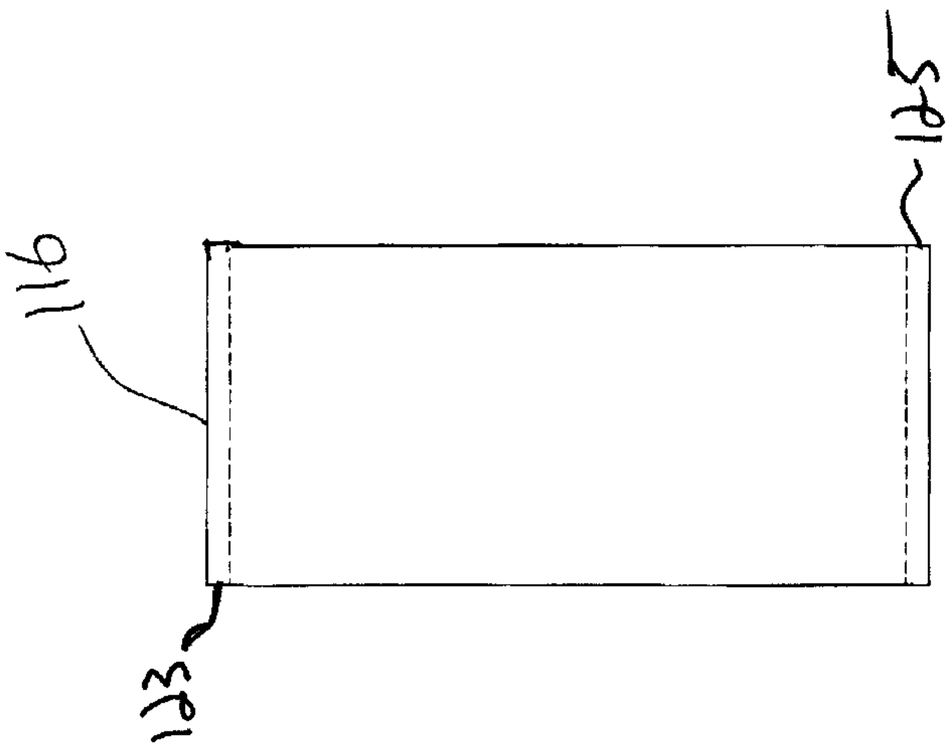


FIG. 22

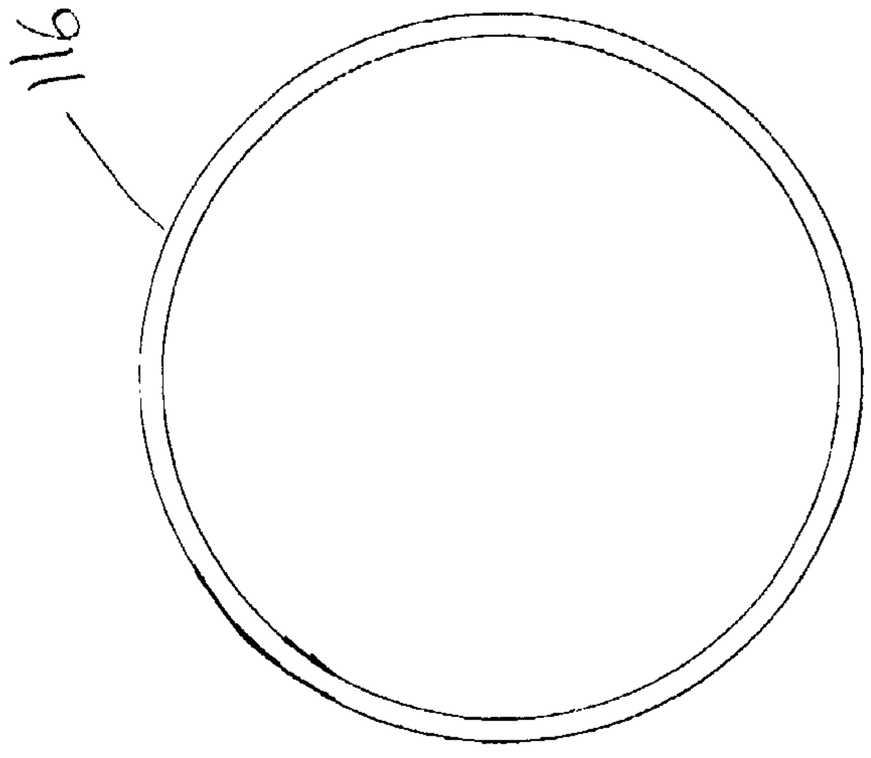


FIG. 21

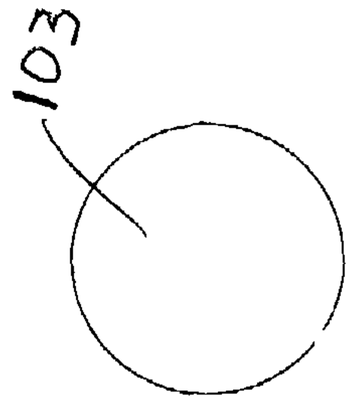


FIG. 25

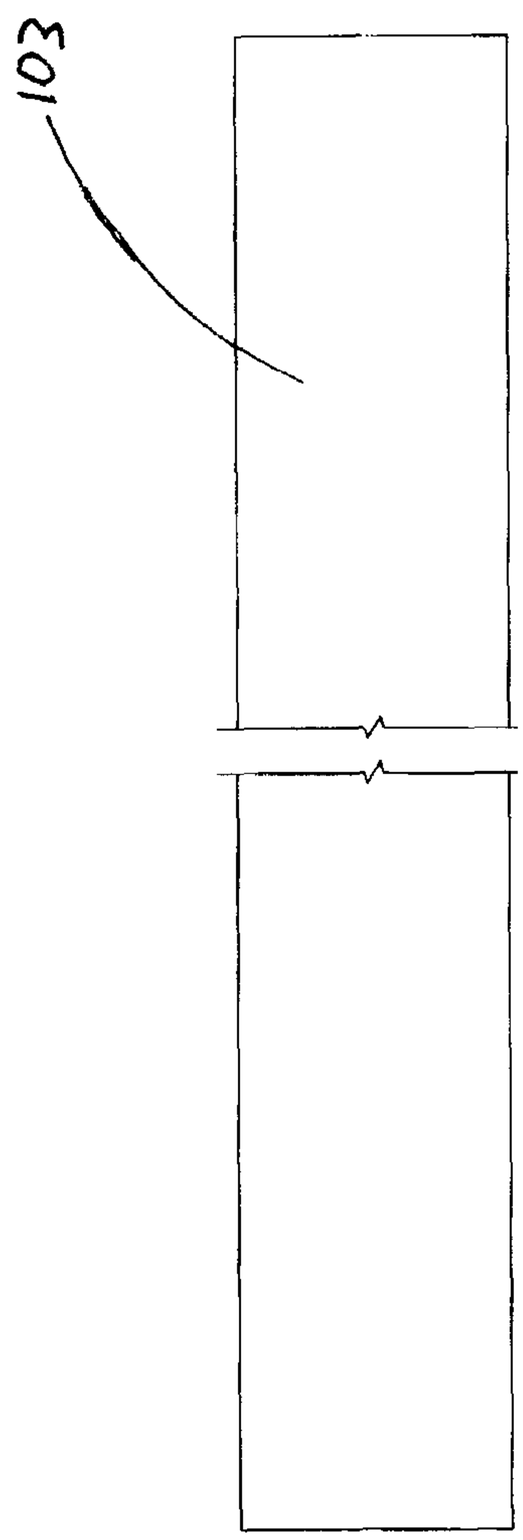


FIG. 26

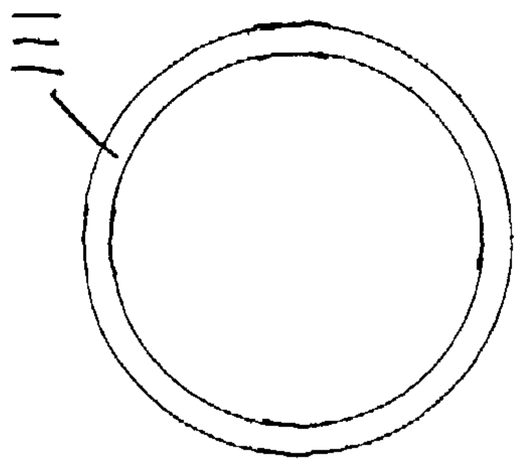


FIG. 27

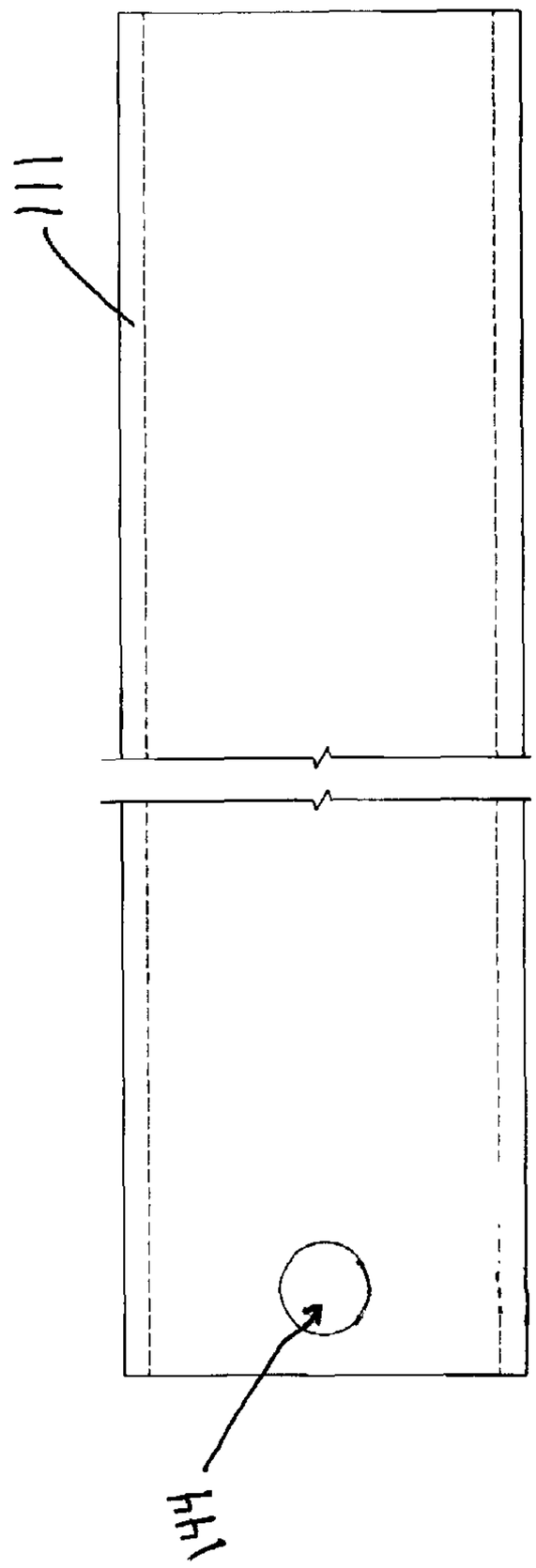


FIG. 26

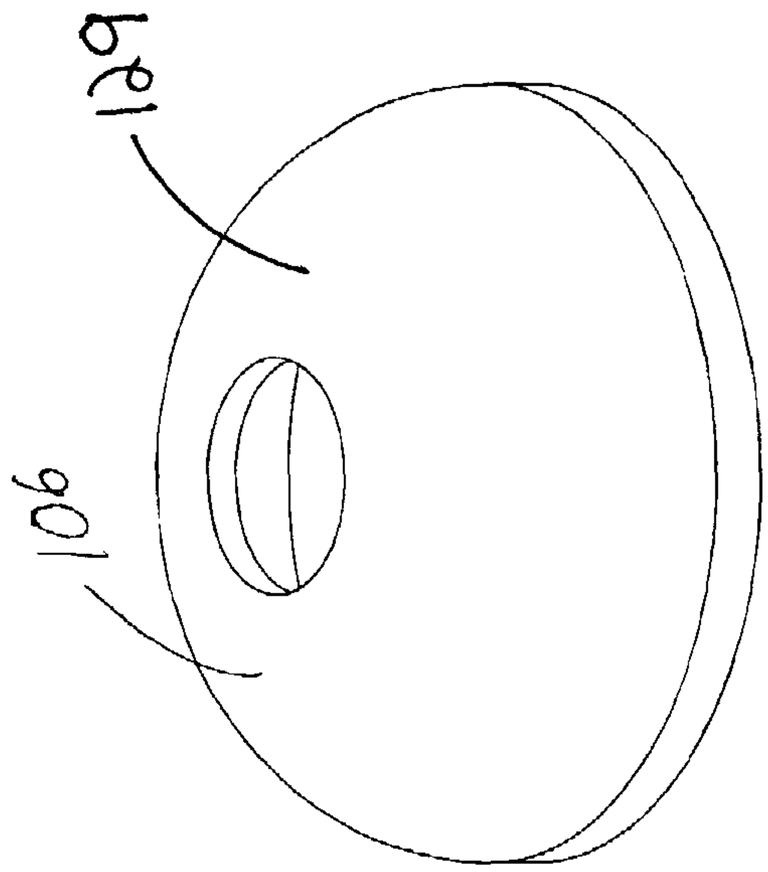


FIG. 28

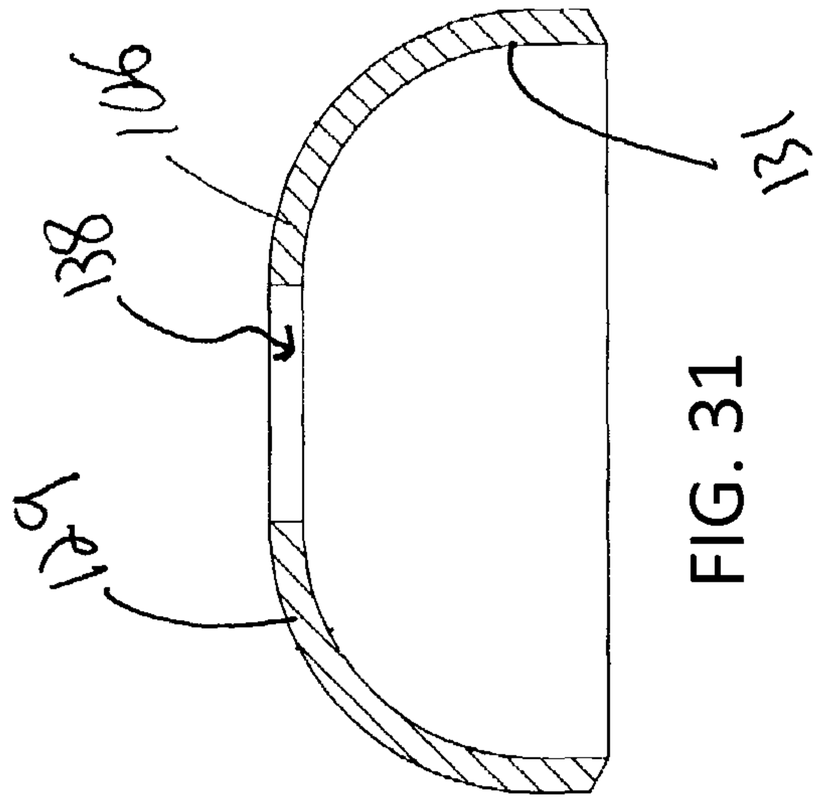


FIG. 31

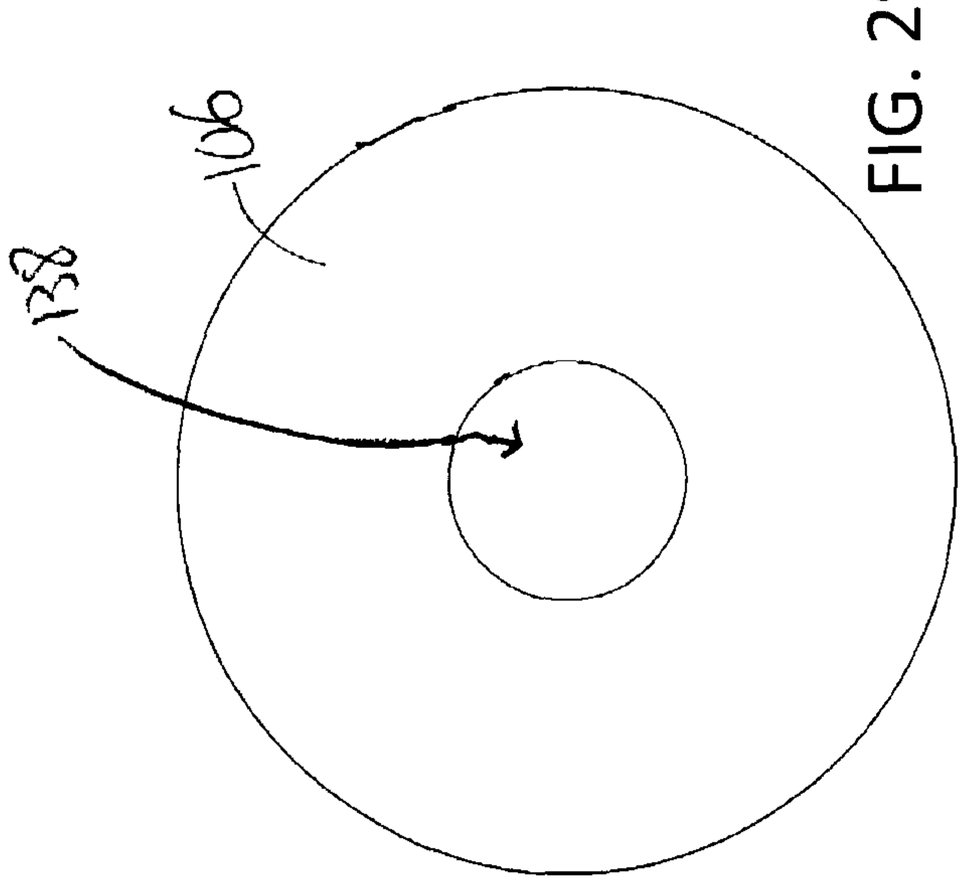


FIG. 29

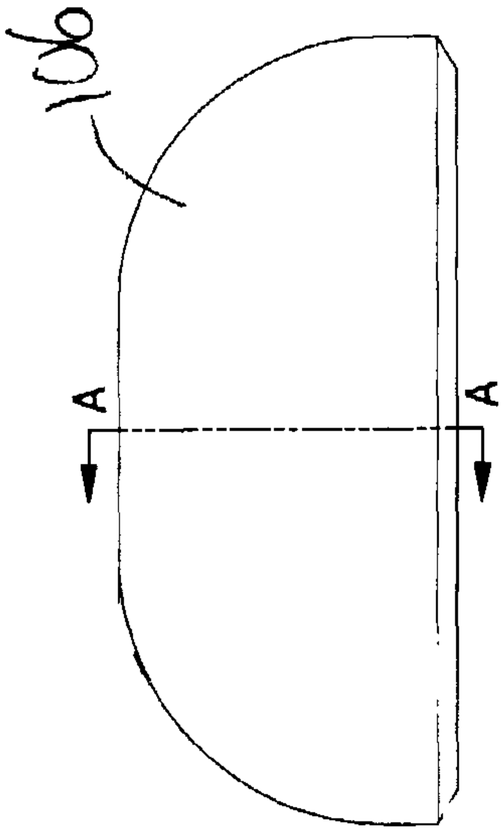


FIG. 30

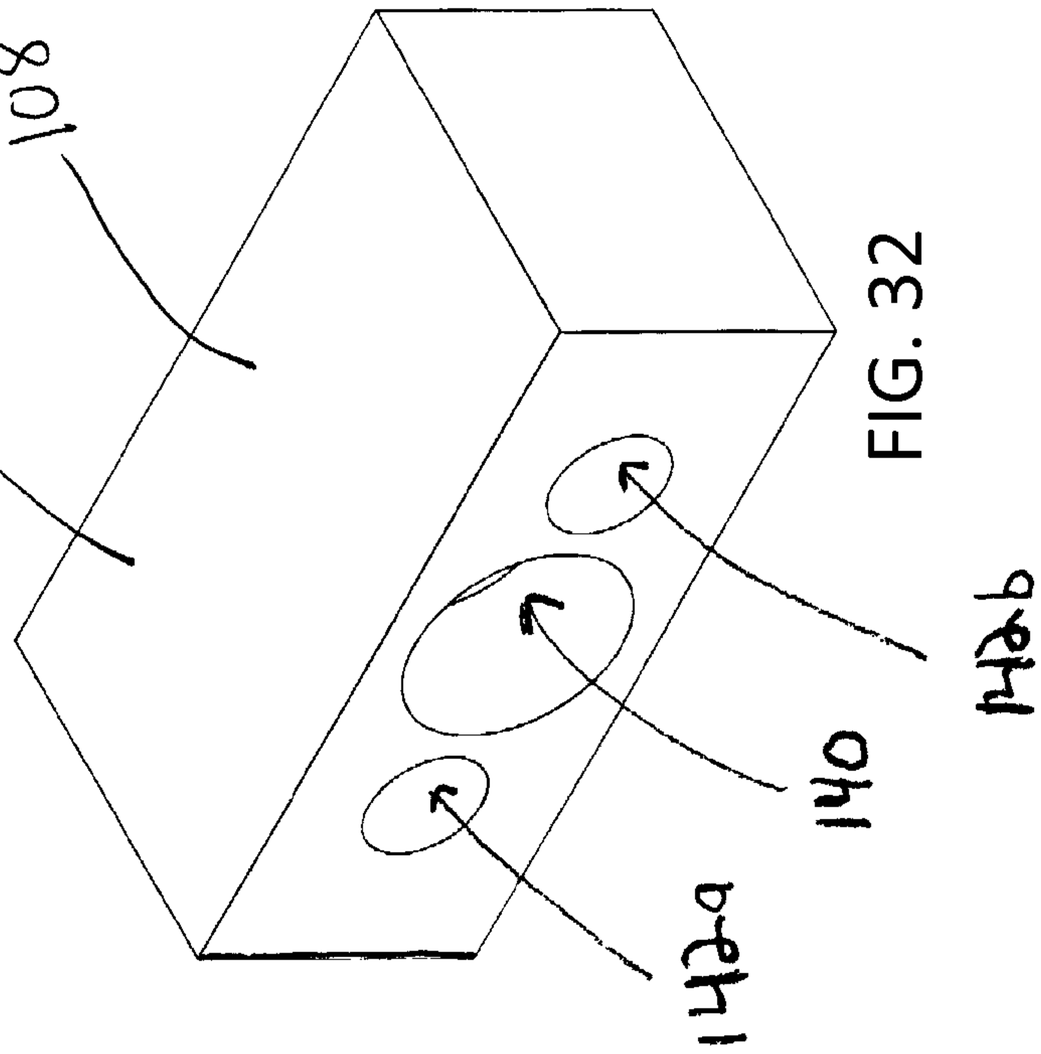


FIG. 32

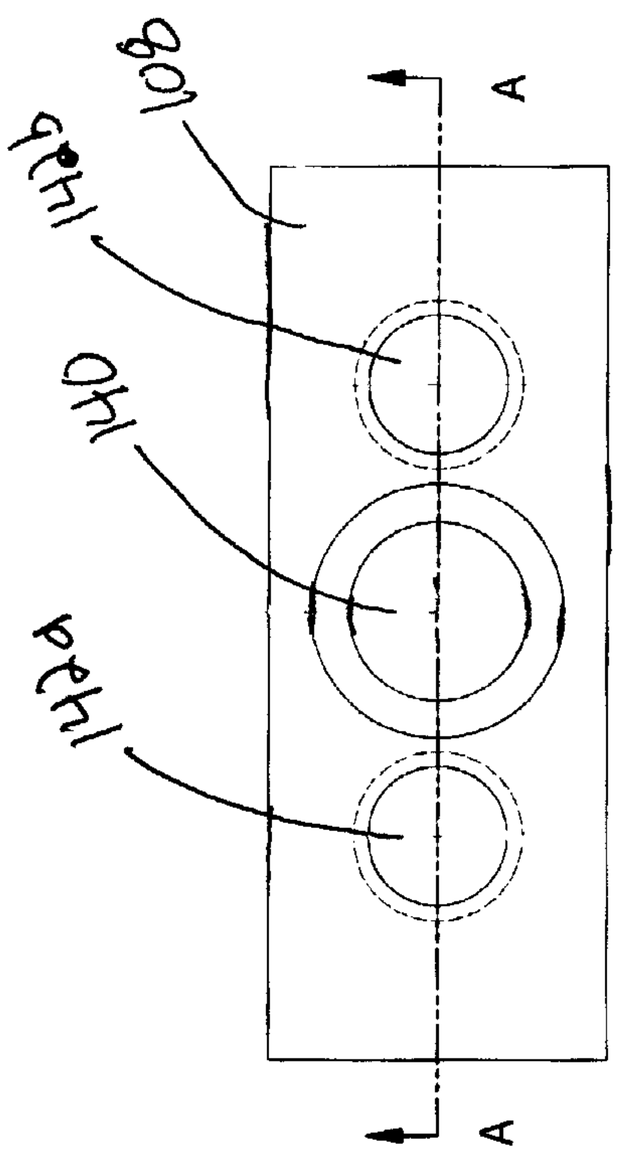


FIG. 33

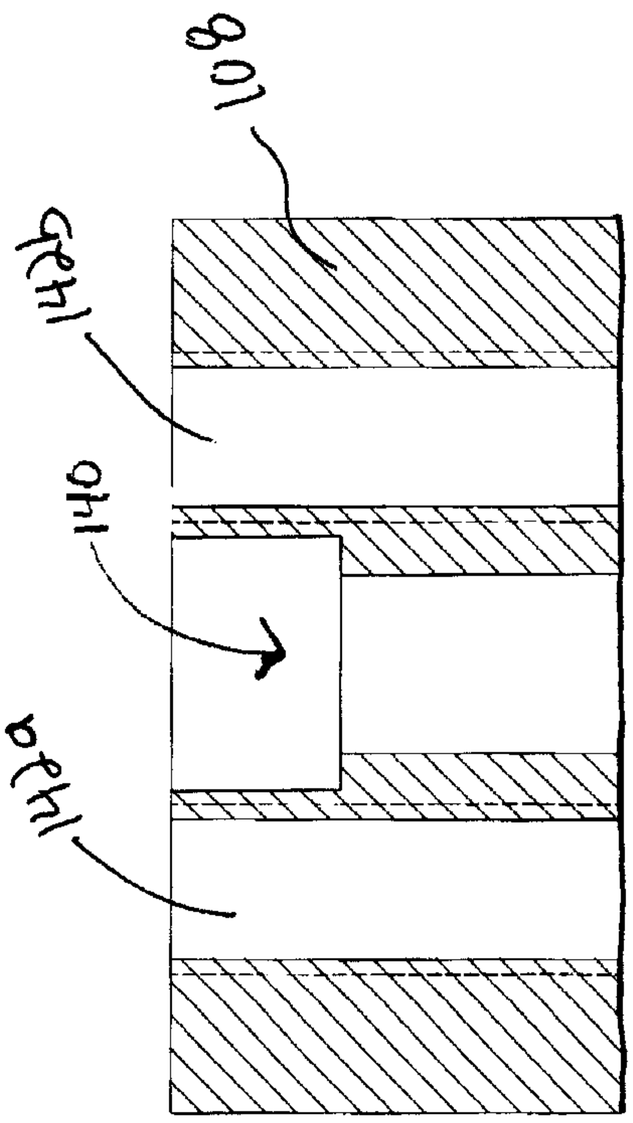


FIG. 34

PARKING METER POLE

PRIORITY

This application claims the priority benefit of U.S. Provisional Application No. 61/980,035 filed on Apr. 15, 2014, which is hereby incorporated herein by reference in its entirety.

FIELD

The present invention relates generally to poles for mounting parking meters and similar devices.

BACKGROUND

There is a need to mount parking meters at a given height above the ground to facilitate the ease of use by users parking their vehicles. Typically a parking meter is mounted on a pole. Conventional poles are simply a length of hollow steel tube. The metal tube is typically sunk into a recess formed in the concrete while it is still wet so that the hardened concrete retains the pole in place. Alternatively, a bottom mounting flange can be secured to the pole at the bottom end thereof, and the flange is fastened to bolts protruding from the cement slab.

The conventional pole systems present multiple drawbacks. First, it is difficult or impossible to run electrical power and communication lines or wiring up through the pole to the meter if the meter requires such connectivity. Second, the rotational alignment of the pole with respect to the meter cannot be changed. Thus, the meter may not be capable of being ideally aligned with respect to the street, or the pole must be replaced when the meter is replaced. Also, exposed mounting hardware at the base of the pole is vulnerable to vandals and thieves who may unbolt and steal the meter. Thus, there is a need for an improved pole mount, mounting system and method of mounting a parking meter.

SUMMARY

The present invention provides a unique pole mounting system for parking meters and the like. The pole mounting system can be configured as a center drawn mounting system which allows the user to securely mount and adjust the inner stanchion in various rotational orientations about the vertical axis. The system also allows any electrical wire or other conduit to be run up inside of the pole. Once the inner stanchion is fastened in place, the outer stanchion fits over top with a first disc on the outer stanchion interlocking with a disc recess on the inner stanchion, thereby preventing the outer stanchion from twisting. Once a locking bolt is in place and the meter is fastened to the top of the stanchion, there is no accessing any of the electrical or mounting hardware, which makes it tamper resistant.

The disclosure includes a parking meter mounting system. The system can include an inner stanchion comprising an elongated body having an upper end and an opposing lower end, and an outer stanchion, comprising an elongated hollow tubular body having an open top end and a bottom end, wherein the inner stanchion is disposed inside of the hollow tubular body. A support plate can be secured to the elongated body of the inner stanchion adjacent the lower end thereof. A receiving disc can be disposed atop the support plate, the receiving disc including an open interior defined by an inner circumference. An interlocking disc can be secured to the bottom end of the hollow tubular body of the outer stanchion, the interlocking disc having an outer circumferential shape configured to register with the inner circumference of the receiving disc to define multiple fixed rotational orientations of the outer stanchion about a vertical axis thereof. At least one aperture can be defined through the support plate to permit the passage of an electrical wiring. A gap also can be formed between the elongated body of the inner stanchion and the hollow tubular body of the outer stanchion of sufficient dimension to permit passage of the electrical wiring from the support plate to the top end of the upper stanchion.

The disclosure also includes a mounting device. The mounting device can include an inner stanchion, comprising an elongated body having an upper end and an opposing lower end, and an outer stanchion, comprising an elongated hollow tubular body having an open top end and a bottom end, wherein the inner stanchion is disposed inside of the hollow tubular body. A support plate can be secured to the elongated body of the inner stanchion adjacent the lower end thereof. A receiving disc can be disposed atop the support plate, the receiving disc including an open interior defined by an inner circumference. An interlocking disc can be secured to the bottom end of the hollow tubular body of the outer stanchion, the interlocking disc having an outer circumferential shape configured to register with the inner circumference of the receiving disc to define multiple fixed rotational orientations of the outer stanchion about a vertical axis thereof. A mounting block can be disposed inside the hollow tubular body adjacent the open top end thereof, wherein the mounting block is releasably secured to the inner stanchion.

The disclosure further includes a method of mounting a parking meter. The method can include securing an interlocking disc to a bottom end of an outer stanchion and disposing an outer stanchion over an inner stanchion assembly. An the interlocking disc of the outer stanchion can be disposed within one of a multiple of fixed rotational orientation positions defined in a recessed region of an inner stanchion assembly to secure the outer stanchion from future rotational movement. A mounting block can be disposed inside of the outer stanchion adjacent a top end thereof. The mounting block can be secured to the inner stanchion assembly. The parking can be secured atop the outer stanchion.

The above summary is not intended to limit the scope of the invention, or describe each embodiment, aspect, implementation, feature or advantage of the invention. The detailed technology and preferred embodiments for the subject invention are described in the following paragraphs accompanying the appended drawings for people skilled in this field to well appreciate the features of the claimed invention. It is understood that the features mentioned hereinbefore and those to be commented on hereinafter may be used not only in the specified combinations, but also in other combinations or in isolation, without departing from the scope of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a pole system according to certain example embodiments.

FIG. **2** is a top view of a pole system according to certain example embodiments.

FIG. **3** is a side view of a pole system according to certain example embodiments.

FIG. **4** is a cross-sectional view of a pole system along line A-A in FIG. **3**, according to certain example embodiments.

FIG. **5** is a perspective view of an inner stanchion of a pole system according to certain example embodiments.

FIG. **6** is a top view of an inner stanchion of a pole system according to certain example embodiments.

FIG. **7** is a side view of an inner stanchion of a pole system according to certain example embodiments.

FIG. **8** is a cross-sectional view of an inner stanchion of a pole system along line A-A in FIG. **7**, according to certain example embodiments.

FIG. **9** is a perspective view of an outer stanchion of a pole system according to certain example embodiments.

FIG. **10** is a top view of an outer stanchion of a pole system according to certain example embodiments.

FIG. **11** is a side view of an outer stanchion of a pole system according to certain example embodiments.

FIG. **12** is a cross-sectional view of an outer stanchion of a pole system along line A-A in FIG. **11**, according to certain example embodiments.

FIG. **13** is a side view of a receiving disc of an inner stanchion of a pole system according to certain example embodiments.

FIG. **14** is a front view of a receiving disc of an inner stanchion of a pole system according to certain example embodiments.

FIG. **15** is a side view of a support plate of an inner stanchion of a pole system according to certain example embodiments.

FIG. **16** is a front view of a support plate of an inner stanchion of a pole system according to certain example embodiments.

FIG. **17** is a side view of a base plate of an inner stanchion of a pole system according to certain example embodiments.

FIG. **18** is a front view of a base plate of an inner stanchion of a pole system according to certain example embodiments.

FIG. **19** is a side view of an interlocking disc of an outer stanchion of a pole system according to certain example embodiments.

FIG. **20** is a front view of an interlocking disc of an outer stanchion of a pole system according to certain example embodiments.

FIG. **21** is an end view of a base tube of an inner stanchion of a pole system according to certain example embodiments.

FIG. **22** is a side view of a base tube of an inner stanchion of a pole system according to certain example embodiments.

FIG. **23** is a perspective view of a base tube of an inner stanchion of a pole system according to certain example embodiments.

FIG. **24** is a side view of a connecting rod of an inner stanchion of a pole system according to certain example embodiments.

FIG. **25** is an end view of a connecting rod of an inner stanchion of a pole system according to certain example embodiments.

FIG. **26** is a side view of an outer tube of an outer stanchion of a pole system according to certain example embodiments.

FIG. **27** is an end view of an outer tune of an outer stanchion of a pole system according to certain example embodiments.

FIG. **28** is a perspective view of a base cover of a pole system according to certain example embodiments.

FIG. **29** is a top view of a base cover of a pole system according to certain example embodiments.

FIG. **30** is a side view of a base cover of a pole system according to certain example embodiments.

FIG. **31** is a cross-sectional view of a base cover of a pole system along line A-A in FIG. **30**, according to certain example embodiments.

FIG. **32** is a perspective view of a mounting block of a pole system according to certain example embodiments.

FIG. **33** is a top view of a mounting block of a pole system according to certain example embodiments.

FIG. **34** is a cross-sectional view of a mounting block of a pole system along line A-A in FIG. **33**, according to certain example embodiments.

DETAILED DESCRIPTION

In the following descriptions, the present invention will be explained with reference to various example embodiments. Nevertheless, these example embodiments are not intended to limit the present invention to any specific example, environment, application, or particular implementation described herein. Therefore, descriptions of these example embodiments are only provided for purpose of illustration rather than to limit the present invention. The invention is to cover all modifications, equivalents, and alternatives falling within the scope of the invention as defined by the appended claims. Dimensions and proportions of the various components can be varied without departing from the scope of the invention, unless specifically recited as limiting in a given claim.

Referring to FIGS. **1-4**, the pole mounting system **100** generally comprises an inner stanchion **102**, an outer stanchion **104** disposed over the inner stanchion, and a base cover **106** disposed over a base plate **118** of the inner stanchion. A mounting block **108** is disposed inside the top end of the outer stanchion **104** and is bolted to the inner stanchion **102** via an interlocking bolt **110**.

A gap G is defined inside of the outer stanchion **104** between the inner surface of the outer stanchion and the outer surface of the inner stanchion to permit electrical wiring or conduit and other physical wires or conduit in the ground can to extend through the pole mounting system so that the meter mounted atop the pole system can be connected to said conduit or wiring.

Referring now to FIGS. **5-8**, the inner stanchion **102** includes an elongated body **103** with a standoff **105** disposed at a top end thereof. The opposing lower end of the body **102** is secured to a support plate **112**. A receiving disc **114** is disposed atop the support plate **112**. These two components together define a recessed region **109** to receive an interlocking disc **120** of the outer stanchion **104** as will be explained later herein. The support plate **112** is also coupled to a top end of a base tube **116**. The base tube **116** is also secured atop a base plate **118**. The bottom side of the base plate **118** makes contact with the ground.

Referring next to FIGS. **9-12**, the outer stanchion **104** comprises an elongated hollow tubular body **111** with an open top end and an interlocking disc **120** disposed at the bottom end thereof. The interlocking disc **120** is sized and shaped to be disposed in the recessed region **109** and register with the inner circumferential shape of the receiving disc **114** in a plurality of rotational orientations. A mounting block **122** is disposed inside of the outer stanchion **104** adjacent the top end of the body **111**.

Referring to FIGS. **13-14**, the receiving disc **114** of the inner stanchion **102** includes an inner circumference **124** shaped to define multiple fixed rotational orientations about the vertical axis. In the FIG. **14**, the shape is shown to be

octagonal, which will provide eight distinct possible orientations about the vertical axis. The inner perimeter shape **124** can be varied (e.g. hexagonal and pentagonal) to provide for more or fewer set points without departing from the scope of the invention. In addition, the shape need not be a uniform polygon, but can be an eccentric shape.

Referring to FIGS. **15-16** the support plate **112** includes a generally flat upper surface **113** for defining a cam surface to support the bottom surface of the interlocking disc **120** of the outer stanchion **104**. A plurality of apertures **126** are defined through the support plate **112** to permit the passage of electrical and network wiring, or other physical connection conduits, through the hollow center of the outer stanchion **104** to a meter disposed atop the outer stanchion **104**.

Referring to FIGS. **17-18** the base plate **118** comprises a generally flat disc body **119** with a centrally located opening **127** through the disc body **119** and a plurality of apertures **128** arrayed around the disc body **119** and extending through the disc body **119**. The apertures **128** are circumferentially elongated to allow bolts or other fastening members or means to extend upward from the concrete slab and protrude upward through the plate apertures **128**, which are then secured in place with respect to the base plate **118**. Thus, the base plate **118** permits some degree of rotational adjustment before being secured rigidly to the ground (e.g. concrete sidewalk) so that it cannot move.

Referring to FIGS. **19-20**, the interlocking disc **120** of the outer stanchion **104** generally comprises a flat disc body **121** with a central opening **130** defined therethrough. The center opening **130** permits passage of the previously noted network and power conduits. The outer perimeter **132** is shaped and sized to interlock with the inner circumference **124** of the receiving disc **114**.

Referring to FIGS. **21-23**, base tube **116** comprises a ring-shaped body having a central opening. The planes of the respective top **123** and bottom ends **125** are parallel to one another.

Referring to FIGS. **24-25**, the connecting rod or elongated body **103** of the inner stanchion **102** comprises an elongated solid body with a circular cross-sectional shape. However, the body could also be made hollow and/or have a non-circular cross-sectional shape (e.g. semi-circular and polygonal). The length of the rod **103** depends on the height above the ground that the meter will be mounted. The width and shape of the body **103** can be varied to accommodate conduit within the outer stanchion **104**.

Referring to FIGS. **26-27**, the body **111** of outer stanchion **104** comprises an elongated hollow tubular shape with a circular cross-section. However, the body **111** could also be formed of a non-circular cross-sectional shape (e.g. semi-circular and polygonal). The length of the body **111** depends on the height above the ground that the meter will be mounted. The width and shape can be varied to accommodate conduit. One or more meter mounting holes **144** can be defined in the body **111** adjacent the upper end of the outer stanchion **104** as shown in FIGS. **1** and **3** for securing the meter in place.

Referring to FIGS. **28-31**, the base cover **106** includes a top aperture **138** sized to permit passage of the outer tube **136**, but not the interlocking disc **120**. The diameter of the aperture **138** is preferably very similar to the outer diameter of the body **111** of the outer stanchion **104**. The cover **106** includes a domed upper surface **129** and recessed bottom surface **131**. The bottom surface defines an enclosed area between the base cover **106** and the base plate **118** when the pole mounting assembly **100** is assembled. Thus, the cover **106** covers over and protects the fasteners used to fasten the base plate **118** to the ground.

Referring to FIGS. **32-34**, the mounting block **108** comprises a rectangular body **133** with a plurality of apertures **140** and **142** defined therein. The block **108** is sized to fit inside of the inner diameter of the outer stanchion **104** and leave gaps between the block body **133** and inner surface of the outer stanchion so that electrical conduit and other connections can pass though to the meter.

The block body **133** includes a central aperture **140** passing through the body from top to bottom. The central aperture **140** is sized to permit passage of the locking bolt **110** through the body **133**. The central aperture **140** also can be shaped to receive a head portion of the locking bolt **110**. First and second parking meter locking apertures **142***a* and **142***b* are disposed laterally adjacent the central aperture **140**. The meter locking apertures **142***a* and **142***b* are configured to provide a means to securely couple the meter head to the pole assembly **100**.

A wide variety of parking meters or other mechanical and electrical devices can be mounted to the present pole device or system **100**. The system **100** can be used in any instance where a mechanical or electrical device needs to be secured to the ground and securely mounted at an elevation above the ground while electrical or other conduit passes internally though the outer stanchion.

The various components described herein can be formed from any suitable rigid material, such as metal, fiber glass, plastics, etc. In one example, the parts are formed of steel. The parts can be plated, coated or painted as is known in the art for various functional (e.g. rust protection) and aesthetic reasons.

In use, the inner stanchion **102** is assembled. Any electrical/communications wiring is fed up through the center of the base plate **118** and the base plate **118** is fastened to the concrete (ground). The outer stanchion **104** is disposed over the inner stanchion **102** and the interlocking disc **120** is secured in a given orientation with respect to the inner stanchion **102**. The base cover **106** can be welded to the outer stanchion prior to assembly of the pole system. The cover **106** thus covers the mounting hardware when the outer stanchion **104** is installed. The mounting block **108** is also pre-welded or secured into the top end of the outer stanchion **104** before system assembly. The locking bolt **110** is tightened to lock the outer stanchion **104** in a fixed rotational position about the vertical axis. After the stanchions **102** and **104** are in place, then the meter is disposed over the upper end of the outer stanchion **104** and coupled to the mounting block **108** and the outer stanchion **104**. Note that there are additional mounting holes **144** defined adjacent the upper end of the outer stanchion as shown in FIGS. **1** and **3** for securing the meter in place.

The rotational alignment of the meter about the vertical axis can be adjusted by loosening the stanchion locking bolt **110** enough to back the interlocking disc **120** out of engagement with the receiving disc **114**. Then the outer stanchion **104** can be rotated with respect to the inner stanchion **102**. The locking bolt **110** is then tightened to again secure the outer stanchion in place **104**. The meter is then fastened to the pole assembly **100** as noted above.

While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiments, it will be apparent to those of ordinary skill in the art that the invention is not to be limited to the disclosed embodiments. It will be readily apparent to those of ordinary skill in the art that many modifications and

equivalent arrangements can be made thereof without departing from the spirit and scope of the present disclosure, such scope to be accorded the broadest interpretation of the appended claims so as to encompass all equivalent structures and products. Moreover, features or aspects of various example embodiments may be mixed and matched (even if such combination is not explicitly described herein) without departing from the scope of the invention.

What is claimed is:

1. A mounting device, comprising:

an inner stanchion, comprising an elongated body having an upper end and an opposing lower end;

an outer stanchion, comprising an elongated hollow tubular body having an open top end and a bottom end, wherein the inner stanchion is disposed inside of the hollow tubular body;

a support plate secured to the elongated body of the inner stanchion adjacent the lower end thereof;

a receiving disc disposed atop the support plate, the receiving disc including an open interior defined by an inner circumference;

an interlocking disc secured to the bottom end of the hollow tubular body of the outer stanchion, the interlocking disc having an outer circumferential shape configured to register with the inner circumference of the receiving disc to define multiple fixed rotational orientations of the outer stanchion about a vertical axis thereof; and

a mounting block disposed inside the hollow tubular body adjacent the open top end thereof, wherein the mounting block is releasably secured to the inner stanchion.

2. The device of claim **1**, wherein at least one aperture is defined through the support plate to permit the passage of a conduit, and wherein a gap is formed between the elongated body of the inner stanchion and the hollow tubular body of the outer stanchion of sufficient dimension to permit passage of the conduit from the support plate to the mounting block.

3. The system of claim **1**, further comprising:

a base plate; and

a base tube disposed atop the base plate,

wherein the support plate is disposed atop the base tube.

4. The system of claim **3**, further comprising a base cover secured over the base plate, the base cover defining an enclosed area between the base cover and the base plate, the base cover further comprising an opening through the base cover, the opening having a circumference greater than a circumference of the elongated hollow tubular body and less than a circumference of the interlocking disc.

5. The system of claim **3**, wherein the base plate comprises a generally flat disc body with a centrally located opening through the disc body and a plurality of apertures arrayed around the disc body and extending through the disc body, the plurality of apertures being circumferentially elongated.

6. The system of claim **1**, wherein the elongated hollow tubular body of the outer stanchion has a circular cross-sectional shape and wherein the elongated body of inner stanchion has a circular cross-sectional shape.

7. The system of claim **1**, wherein the mounting block includes a plurality of apertures defined vertically through the mounting block, wherein at least one of the plurality of apertures permits mounting of a parking meter atop the outer stanchion and at least one of the plurality of apertures is configured to receive a locking fastener coupled to the upper end of the inner stanchion.

8. The system of claim **1**, wherein the mounting block is configured to permit passage of a conduit to a parking meter secured atop the outer stanchion.

9. The system of claim **1**, wherein at least one aperture is defined through the support plate to permit the passage of an electrical wiring.

10. The system of claim **1**, wherein a gap is formed between the elongated body of the inner stanchion and the hollow tubular body of the outer stanchion of sufficient dimension to permit passage of an electrical wiring from the support plate to the top end of the upper stanchion.

* * * * *